V.G.2 Stationary Fuel Cell System Development/Demonstration

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Project Start Date: TBD
(Project has not been contracted)
Project End Date: TBD
(Project has not been contracted)

Objectives

The project will demonstrate a prototype, combined heat and power (CHP), grid-connected, 5-kW net electric output fuel cell power system. A unique blend of technological capabilities and new component designs will be developed to yield a reliable and efficient fuel cell system with the following goals:

- Cost reduction (targeting 50% cost reduction with production volumes)
- Increased efficiency (80% CHP efficiency)
- Increased durability (>20,000 hours)

Technical Barriers

This project addresses the following technical barriers from the Fuel Cells section of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

(A) Durability
(B) Cost
(C) Performance

Technical Targets

This project is to develop an integrated reformer/fuel cell system that operates on renewable fuel (ethanol). The prototype system will be tested and analyses will be completed to measure progress towards the following 2011 DOE technical targets for Integrated Stationary PEM Fuel Cell Power Systems:

- Durability: 40,000 hours
- Cost: $750/kW
- Performance: 40% electrical efficiency, 80% CHP efficiency

Approach

The project will develop and integrate technologies with the goal of attaining durability, cost, and performance targets using improved materials, component design, system architecture, and low cost manufacturing techniques. The following specific technical initiatives will be completed:

- Incorporate improved membrane electrode assemblies (MEAs) that exhibit increased durability and efficiency.
- Develop next generation integrated reformer design that incorporates more durable catalyst formulations and utilizes low cost manufacturing techniques.
- Develop improved fuel delivery system.
- Conduct manufacturing cost analysis to project total system costs at high production volumes.
- Design, build, test and demonstrate prototype system.